

The weed that was not: *Picris hieracioides* (Asteraceae) in Australia

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Introduction

Ferdinand von Mueller included *Picris hieracioides* L. in his list of plants 'immigrated and naturalized in Victoria' (Mueller 1888). Before this, botanists considered *P. hieracioides* indigenous to Australia; and botanists after Mueller recorded *P. hieracioides* across Australia as a naturalised alien.

This study of the birth, long life and death of the idea that *P. hieracioides* was the sole taxonomic identity of *Picris* L. in Australia is based on an investigation of collections and published records, with a focus on Victoria.

Early *Picris* collections

Australian specimens of *Picris* were first collected during voyages of exploration. In the late 18th and early 19th century, substantial plant collections were made during British and French naval expeditions that focussed on science as well as exploration of the Pacific. Joseph Banks and Daniel Solander collected *Picris* in 1770 during James Cook's voyage as did Jacques-Julien Houtou de Labillardière in 1792–93 during Antoine-Raymond-Joseph Bruny d'Entrecasteaux's voyage. And *Picris* was collected during the subsequent voyages of Matthew Flinders and Nicolas Baudin.

Later *Picris* collections were made under diverse circumstances. British naval expeditions continued to yield specimens. Ship's surgeon Joseph Dalton Hooker collected during James Clark Ross's 1839–43 Antarctic expedition to map terrestrial magnetism (Endersby 2008) and expedition naturalist John MacGillivray collected during Owen Stanley's 1847 hydrographic survey of Moreton Bay (Goodman 2005). *Picris* was also collected during surveyor-general Thomas Mitchell's 1836 expedition into the interior of the Colony of New South Wales (Lindley 1838). Other visitors and residents also contributed *Picris* collections. Sent by Banks to collect for the Royal Gardens at Kew, Alan Cunningham joined sea and land expeditions before exploring north of Bathurst in 1822 (Curry et al.

Abstract

Picris hieracioides L. has a long Australian history. In the first published record of *Picris* L. in Australia, Robert Brown considered *P. hieracioides* indigenous to Europe and Australia. Even after the establishment of species from Australian material, Joseph Hooker perpetuated the idea that the variable and widely distributed *P. hieracioides* was the sole taxonomic identity of *Picris* in Australia. George Bentham agreed, but suggested that *P. hieracioides* may not be indigenous throughout Australia. After initially identifying *Picris* specimens as other Australian species, Ferdinand Mueller identified specimens as *P. hieracioides* and declared it naturalised. *Picris hieracioides* (naturalised) represented *Picris* in state and regional floras until Walter Lack and Sebastian Holzapfel reinstated old names and established new taxa in the late 20th century.

Key words: Australian indigenous plants, George Bentham, Robert Brown, Sebastian Holzapfel, Joseph Hooker, Ferdinand von Mueller

Muelleria 32:39–51 (2014)



2002). Before and after his 1841 appointment as first director of the Royal Botanic Gardens at Kew, William Jackson Hooker received specimens from Ronald Campbell Gunn in Van Diemen's Land (where Gunn assisted William Hooker's son Joseph and received specimens from the Port Phillip District), and James Drummond in the western Australian Swan River Colony where, during 1838–41, Johann Ludwig Preiss also collected (Holzapfel 1994). From Wando Vale pastoral station (near present-day Casterton, Victoria), John George Robertson also contributed *Picris* collections that eventually reached British and French museums of natural history and the Gardens at Kew (Holzapfel 1994).

These early collections include the first Victorian specimens of Victoria's three *Picris* species before the establishment of both the Colony and those species.

***Picris hieracioides* indigenous to Australia as well as Europe**

Robert Brown provided the first published record of *Picris* in Australia. He probably examined Banks' and Labillardière's collections, as well as his own made in 1801–05 during and after Flinders' circumnavigation of Terra Australis (Holzapfel 1994). Brown established many new species from his Australian collections. But he saw his Australian *Picris* collections as sufficiently similar to the European *P. hieracioides* to identify them under that name, one of a suite of species he considered native to both Europe and Terra Australis (Brown 1814). Since most, perhaps all, of the Australian specimens that Brown examined were collected at localities unsullied by Europeans and their invasive species, *P. hieracioides sensu* Brown was almost certainly indigenous (or a pre-European introduction).

Joseph Hooker agreed that *P. hieracioides* was indigenous to Australia. In documenting *Picris* that he collected from New Zealand and Van Diemen's Land during Ross's Antarctic expedition and later in the Himalayas, Hooker could examine other *Picris* specimens collected during the first half of the 19th century. At the time, British (predominantly descriptive) botany was languishing behind more philosophical (as in natural philosophy) sciences, and Kew Gardens was seeking scientific and imperial status. Hooker sought to raise botany to a philosophical science with theories and explanations and to show that he was a

philosophical botanist. As Stevens (1997) and Endersby (2008) have explained, broadly delimited species were crucial for Hooker's ideas. Such variable and widely distributed species would allow him to develop theories and suggest explanations for their disjunct distributions and thereby contribute to the young science of phytogeography. The perpetuation at Kew of broadly delimited species would keep taxonomic power from colonial and continental species-mongers. And smaller numbers of species would allow the speedier completion of colonial floras, essential for documenting colonial resources for the British imperial enterprise.

In the introductory essay in his New Zealand flora, Hooker (1853) discussed his views that species 'vary more than is generally admitted' and 'are much more widely distributed than is usually supposed'. Hooker (1853) warned of the proliferation of confusion and synonymy caused by botanists who, without comparing specimens from different environments, exaggerated minor characters. He was concerned that local botanists and narrow specialists created species rather than acknowledging environment-induced variation within broadly delimited species. His own examination of numerous specimens across a wide geographic range showed that

differences of habit, colour, hairiness, and outline of leaves, and minute characters drawn from other organs than those of reproduction, are generally fallacious as specific marks, being attributable to external causes, and easily obliterated under cultivation. (Hooker 1853: xiii)

In his New Zealand flora, Hooker (1853) recorded the European *P. hieracioides* which also inhabited 'various parts of India, Australia, Tasmania and New Zealand,' and varied 'considerably, especially in hairiness, in all places, being sometimes nearly smooth, at others very hispid with stiff, spreading bristles'. Hooker (1853) would not distinguish the New Zealand plant from 'the common European plant', which he had 'also gathered in the Himalaya Mountains at 9000 feet elevation'. Considering a New Zealand species 'only a rather more slender and smooth state of the plant', he reduced it to a variety. *Picris hieracioides* was clearly a variable and widely dispersed species that suited Hooker's ideas.

Hooker recorded *P. hieracioides* in the third fascicle of his *Flora Tasmaniae*, published in October 1856 [the whole volume appeared later (Hooker 1860)]. By this time, he was assistant director of the Gardens at Kew and

botanists outside Kew had established four *Picris* species from Australian material: *P. angustifolia* DC., *P. osperrimo* Lindl., *P. borbororum* Lindl. and *P. squorrosa* Steetz. Hooker (1860) reproduced his New Zealand entry for *P. hieracioides* and, presumably considering these other Australian species the result of unnecessary species-splitting, synonymised them under *P. hieracioides*.

The establishment of endemic Australian species

Augustin-Pyramus de Candolle had seen species differently. Having divided the world into botanical regions with indigenous plants peculiar to each, Candolle saw endemism as common and widely dispersed cosmopolitan species as rare (Nelson 1978). Australia was one botanical region; Europe had four. So it is not surprising that Candolle did not see *Picris hieracioides* in Australian specimens. Instead, Candolle (1838) used coastal and inland collections (by J.B.L.T. Leschenault de la Tour and Antoine Guichenault on the southern coast of New Holland during Baudin's 1800–04 expedition and by Alan Cunningham near Bathurst in 1822) to name and describe *P. angustifolia*.

John Lindley, professor of botany at University College, London, and vice secretary of the Horticultural Society, established two *Picris* species from Australian material. Using 'specimens from my invaluable correspondent, Ronald Gunn, Esq', in Van Diemen's Land (Herbarium Royal Botanic Gardens, Kew, K000796462), Lindley (1838) named and described *P. osperrima*, noting that it 'is like *P. hieracioides* in appearance, but has longer narrower leaves, larger flower-heads, and an exceedingly rough surface.'

Lindley (1838) also used material from a plant 'raised in the garden of the Horticultural Society from seeds procured by Major Mitchell in one of his expeditions into the interior of New Holland' to name and describe *P. borbororum*. The seeds were found in an Aboriginal food bag near Victoria's present-day Kerang in June 1836 (Holzapfel 1994). Lindley (1838) explained that *P. borbororum*

forms one of the very few Cicharaceae plants known in New Holland, and, along with two other species of the

same genus, one of which is noticed by M. De Candolle, gives to Australia another of the very few features which that country possesses in common with Europe. It is an erect, branched plant, nearly 3 feet high, and is what is mentioned by Major Mitchell at p. 148 of the second volume of his work on Australia, as having been found by him par-bailed, as a part of the food of the natives. It seems to be only an annual, and is about as fit for food as a saw-thistle.

Hamburg botanist Joachim Steetz established another species. Particularly interested in the Asteraceae, Steetz used Preiss's south-western Australian collections (Short & Sinkora 1988) to describe *P. squorrosa* in Lehmann's *Plontae Preissionae* (Steetz 1845). In the Swan River Colony, James Drummond reported 'a strong-growing species of *Picris*, indigenous here, the large heads of which, full of seeds, are a favourite food of the horses' (Drummond 1843). Drummond's collection (K000796459) shares a Kew herbarium sheet (Fig. 1) with Port Phillip *P. squorrosa* (K000796458) sent by Gunn in 1842 (Ducker 1991) and was later used to establish another large-headed species, *P. wogenitzii* Lack.

Picris according to Ferdinand Mueller

Without access to European herbaria rich in Australian collections, the Colony of Victoria's government botanist, Dr (later Baron Ferdinand von) Mueller, had to rely on the sometimes inadequate descriptions in published protologues to guide his identification of Australian specimens. He brought to Australia a German translation of Brown's works (Maroske 2012), Candolle's *Prodromus* and Lehmann's *Plontae Preissionae* (Maroske & Cohn 1992) and, in Melbourne, sought to keep up with taxonomic developments by buying books and journals. He would have read Brown's Australian *Picris hieracioides* record and protologues for other Australian *Picris* species; and he may well have been familiar with the protologue, herbarium specimens and living plants of *P. hieracioides* in Europe. In the 1850s he had *P. hieracioides* cultivated in the Melbourne Botanic Garden (Mueller 1858). In the 1840s and 1850s, even after beginning his concerted Kew correspondence, Mueller did not identify Australian collections as *P. hieracioides*.

Mueller identified his 1847–51 South Australian collections as *P. squorraso* and *P. angustifolia* (Appendix 1) and listed *P. angustifolia* in his first systematic index

1. *Picris asperima* is a synonym of *P. angustifolia* subsp. *angustifolia*.

of Victorian plants (Mueller 1853). There are no dated *Picris* collections in that period (RBG Melbourne 2012), but Mueller identified as *P. angustifolia* some undated specimens collected in the late 1850s (Appendix 1). They include John Dallachy's Murray River collection in 1858 (Mueller 1858; 1860) and Charles Stuart's near Moreton

Bay, perhaps in the summer of 1858–59 when Stuart, 'our collector at Moreton Bay,' sent Mueller 'a supply of dried specimens of plants' (Home et al. 1998: 364). And Mueller identified (wrongly) Stuart's 1855 Tasmanian collection as *P. barbarorum* (Appendix 1).



Figure 1. Two *Picris* collections at Kew: Port Phillip, Gunn (two left-hand pieces), and Swan River, Drummond (two right-hand pieces), both referred to by Bentham (1867) under *P. hierocioides* var. *squarrosa*, currently identified as *P. squarrosa* and *P. wagenitzii* respectively. The Drummond collection is the type of *P. wagenitzii* Lack. The Trustees of the Royal Botanic Gardens, Kew.

But Dallachy's 1858 Murray collection is *P. squarrosa*. Mueller left unidentified two other *P. squarrosa* collections and identified Dallachy's *P. squarrosa* collection near the lower Wimmera in the spring of 1860 (Mueller 1861) only as *Picris* (Appendix 1). Mueller probably identified these collections before he could examine Preiss's *P. squarrosa* specimens after Steetz's herbarium reached Melbourne in December 1863 (Short & Sinkora 1988).

By then Mueller had changed his taxonomic mind about *Picris*. He had earlier anticipated that Hooker's New Zealand flora would

be a guide to direct roads and correct directions through the labyrinth of systematic[s]. It will open many of our best botanists, and directly to the continental ones, their eyes to see what are the real limits of species. (Home et al. 1998: 209)

With his own 'opportunity to study the laws of variation of species more carefully in the field & under the most varied circumstances, than any other or at least than most Botanists', Mueller, ever the believer in the fixity of species, acknowledged in 1862 that 'permanent & unalterable' species 'are subject to vastly more variations than we were accustomed to suppose!' (Home et al. 2002: 168). Perhaps he had *P. hieracioides* in mind. By then he was identifying Australian collections as *P. hieracioides*.

Mueller had received Hooker's *P. hieracioides* record in the third fascicle of *Flora Tasmaniae* in 1857 – between January, when he had the first two fascicles, and September, when he was 'longing very much' for the fourth (Home et al. 1998: 261, 321, 324). Australian specimens that Mueller identified as *P. hieracioides* include undated collections by Hermann Beckler, Augustus Oldfield, Frederick Waterhouse and Anthelme Thozet (Appendix 1) which appear to have been collected in about 1860 (Mueller 1860, 1861, 1862; Home et al. 1998: 443; Home et al. 2002: 96, 134, 135). Unfortunately no extant correspondence or reports provide proof that Hooker's *Picris* decision convinced Mueller to identify specimens as *P. hieracioides*. But the timing of this and Mueller's acceptance of very variable species makes it likely.

Mueller despatched to Kew specimens labelled *P. hieracioides* along with Preiss's and other earlier specimens identified as other Australian species.

Bentham's *Flora australiensis* – *Picris hieracioides* and *P. hieracioides* var. *squarrosa*

Far from the landscapes in which Australian plants have evolved and flourished and from the Australian herbarium that Mueller was developing in Melbourne, George Bentham was preparing an imperial flora of Australia. Deprived of his long-cherished ambition to document the Australian flora, Mueller agreed to assist Bentham and sent on loan taxonomic batches of Australian collections from Victoria's growing government herbarium (Mueller 1862; Home et al. 2002: 21). They included three dozen *Picris* collections in time for Bentham's preparation of the Compositae section of volume three of his *Flora australiensis*. Mueller's blue labels for these collections are marked with the letter 'B', which is interpreted in MELISR (RBG Melbourne 2012) as 'Seen by Bentham' (Appendix 1).

Unlike Brown, Hooker and Mueller, Bentham had not seen *Picris* in the wild in Australia. This did not matter. At Kew, it was considered much more important to compare numerous herbarium specimens than rely on scattered field observations (Stevens 1997; Endersby 2008): only a substantial spread of specimens could reveal the full range of variations. Undistracted by field observations, Bentham could examine the *Picris* collections available to Hooker, Frederick Adamson's Melbourne collection and several other subsequent arrivals, and those sent by Mueller. In the third volume of his *Flora australiensis*, published in January 1867, Bentham (1867) cited *Picris* collections by Brown, Hooker, Preiss, MacGillivray, Drummond, Gunn, Cunningham and Adamson and by Mueller, Dallachy, Beckler, Stuart, Waterhouse and Oldfield. He did not cite specimens collected during French voyages or Mitchell's expedition (used by Candolle and Lindley).

Having earlier agreed with Hooker that species should be broadly delimited (Stevens 1997: 360), Bentham agreed that *P. hieracioides* was indigenous to Australia and was the only Australian species. Bentham (1867) considered *Picris*: 'A genus containing but few species, natives of the temperate and subtropical regions of the northern hemisphere in the Old World, one of which is also the Australian one'. But Bentham queried two aspects of Hooker's *Picris* decision – the absolute

indigenous status of *P. hieracioides* and the synonymy of all other Australian species under it.

With the Preiss specimens that Steetz (1845) had used to describe *P. squarrosa* and Port Phillip specimens from Gunn labelled '*Picris squarrosa*?' (Fig. 1), Bentham (1867) decided that *P. squarrosa* deserved more than synonymy and made a new combination and status, *P. hieracioides* var. *squarrosa* (Steetz) Benth.: 'More hispid, with larger flower-heads and more numerous recurved outer involucre bracts'. Bentham (1867) cited Gunn's Port Phillip collection, South Australian collections by 'Mueller and others', and Western Australian collections by Drummond, Preiss, Oldfield and George Maxwell. Like Mueller, Bentham (1867) had trouble identifying *P. squarrosa* consistently and cited Beckler's Burke and Wills expedition collection and Dallachy's Wimmera collection as *P. hieracioides*.

Bentham also suggested that *Picris* may not be indigenous throughout Australia. Observing that *P. hieracioides* 'has much spread with cultivation', Bentham (1867) opined: 'It may therefore be an introduced plant in many of the Australian localities. In others however there is every probability of its being truly indigenous.' Gunn's Van Diemen's Land collection (K000796461) was annotated 'Introduced'.

Mueller, Maiden and Mitchell – *Picris hieracioides* native or naturalised?

Agreeing with Hooker and Bentham that Australia had a single species of *Picris* (until *P. echinoides* L. was recorded), Mueller continued to write *P. hieracioides* on specimen labels and in publications. But, for reasons unavailable in extant correspondence and reports, Mueller did not agree that *P. hieracioides* might be indigenous. By the 1880s, he could examine more than twice as many *Picris* collections as he had sent Bentham (RBG Melbourne 2012), was well-aware of weeds in European-disturbed areas in South Australia and Victoria (Gillbank 2007) and, perhaps, had observed *Picris* colonising disturbed areas as later noted (e.g. by Murray & Brown 1992) (Neville Walsh pers. comm.). Convinced that *P. hieracioides* was, like *P. echinoides*, a naturalised alien, Mueller (1888) listed both species in 'Plants, hitherto immigrated and naturalized in Victoria' in his *Key to the system of Victorian plants*, with no mention of *P. hieracioides* var. *squarrosa*. And Mueller included no *Picris* in his 1882 and 1889

Census of Australia's indigenous vascular plants.

Mueller identified as *P. hieracioides* an 1889 specimen labelled 'Senecio?' (MEL 0067728A, now identified as *P. angustifolia* subsp. *carolorum-henricorum* (Lack) S.Holzappel). It was collected in the Blue Mountains (RBG Melbourne 2012) by a botanist who shared Mueller's interest in early Australian plant collections but who, unlike Mueller, considered *P. hieracioides* indigenous. The collector was the curator of Sydney's technological museum, Joseph Henry Maiden. Maiden (1889) included *P. hieracioides* in the food section of his book, *The useful native plants of Australia*, and quoted two paragraphs about its Aboriginal culinary use from Mitchell's 1836 expedition report.

Intriguingly, Mueller later mentioned *P. hieracioides* without indicating whether he considered it naturalised or native. Identifying South Australian collections in a letter to Jessie Hussey,² and discussing Sydney and Blue Mountains plants used by Aborigines in a letter to Robert Etheridge,³ Mueller referred to *P. hieracioides* without any indication that it was any less indigenous than other indigenous species that he mentioned.

An article in *The Queenslander* of 21 May 1898 reminded readers that the thickened root of 'the Tao (*Picris hieracioides*) of Sir Thomas Mitchell' was 'roasted in the usual primitive fashion'. Maiden, now New South Wales government botanist and director of Sydney's botanic gardens, was still interested in indigenous plants with economic potential. He expanded his 1889 entry on *P. hieracioides* and, in January 1898, collected a specimen (NSW 129001, now identified as *P. angustifolia* subsp. *merxmuelleri* Lack & S.Holzappel) on Mount Kosciuszko. In his series 'Native Food-plants', Maiden (1899) recorded that Mitchell had found roots of *P. hieracioides*, 'a small cichoraceous plant with a yellow flower, named Tāo by the natives,' in food bags left behind by their fleeing owners. The omission of *P. hieracioides* from Mueller's *Census* prompted Maiden (1899) to ask:

2. Mueller to Jessie Hussey, 1893 and 1894. The Mueller Correspondence Project drew my attention to this letter, held at the State Library of South Australia, Adelaide, and gave me access to a transcription of it.

3. Mueller to Robert Etheridge, 14 December 1895, Australian Museum, Sydney; also courtesy of the Mueller Correspondence Project.

[I]s it not in the highest degree unlikely that our benighted aborigines of the interior, so early as the third [sic] decade of this century, would be found, when visited for the first time by a white man, to have the roots of an immigrated plant in doily culinary use?

Despite the collection of *Picris* at pre-contact localities and its pre-contact consumption by indigenous Australians, Maiden's question did not stop botanists recording *Picris* across 20th century Australia as **P. hieracioides*. [Here and below the asterisk indicates that the species was considered naturalised in the particular publication being discussed].

Picris in Victoria according to Ewart and Willis

Professor Alfred Ewart was Victoria's government botanist during 1906–20 in the then recently named National Herbarium of Victoria, which, until 1912, was in the Department of Agriculture where weeds were a growing concern (Cohn 2005). Like Mueller, Ewart considered *Picris hieracioides* naturalised not native. In *The weeds, piasan plants, and naturalized aliens of Victoria*, Ewart (1909b) reported that both *P. echiaides* 'The Ox Tongue' and *P. hieracioides* 'Sometimes termed the Hawkweed Picris' were 'likely to prove troublesome if neglected, but can be kept down by cultivation, and the prevention of seeding. They are not poisonous but useless or even objectionable in fodder'.

Ewart expressed no surprise that *P. hieracioides* was found thriving in a national park, albeit one whose landscapes had earlier been subjected to mining, grazing and logging. Reporting on the National Herbarium's 1908 botanical survey of Wilson's Promontory, Ewart (1909a) noted that *P. hieracioides* was one of the commonest and most widely spread weeds. Herbarium assistant James Audas collected a specimen (MEL 0649121A, now identified as *P. angustifolia* subsp. *angustifolia*) (RBG Melbourne 2012) and included **P. hieracioides* in his Wilson's Promontory species list (Ewart 1909a).

Work by Ewart and others led to the inclusion of *P. hieracioides* in the weed list proclaimed under Australia's *Quarantine Act 1908* in July 1909 (Maiden 1920). Now *P. hieracioides*, as well as *P. echiaides*, was prohibited entry into Australia.

While *P. echiaides* was gazetted a noxious weed in various Victorian municipalities, *P. hieracioides* was recorded in another remote region loved by field naturalists – Victoria's alps. Mueller had justified his 1854–55 summer botanical survey of this region to allow comparisons with Hooker's New Zealand and Tasmanian floras (Gillbank 1992), but he left no alpine *Picris* collections (RBG Melbourne 2012). However, several decades after *P. angustifolia* subsp. *merxmülleri* was first collected in Victoria, in East Gippsland, Alfred Tadgell collected it in the alps – on Mount St Bernard in December 1913 (MEL 1527522A) and Mount Feathertop in the summer of 1921–22 (MEL 0067770A and 1527523A) (RBG Melbourne 2012). Tadgell (1922) added **P. hieracioides* to the Victorian Alps species list, and later recorded **P. hieracioides* on Mount Bogong (Tadgell 1924).

Apparently unaware of Tadgell's *P. hieracioides* records, Ewart (1931) recorded in his *Flora of Victoria* that **P. hieracioides*, Hawkweed Picris, was a 'bitter weed, native to Europe, Asia, and Africa, common in Victoria, and recorded as naturalized in 1876, and at Wilson's Promontory in 1909'. Was 1876 a misprinted 1867? That year Bentham (1867) suggested that *P. hieracioides* might, in many Australian localities, be introduced. Ewart (1931) recorded Bentham's variety *squarrosa* 'a rough form with large heads and the achenes slightly beaked' without indicating whether it might be indigenous.

By the time that James Hamlyn Willis was preparing *A handbook to plants in Victoria*, the late Alfred Tadgell's substantial herbarium had been donated to MEL (Morris 1949) and Willis could examine dozens of Victorian *Picris* collections among scores of Australian collections (RBG Melbourne 2012). Echoing Brown, Hooker, Bentham, Mueller and Ewart, Willis published records for and identified specimens as *P. hieracioides*.

Some MEL collections are now identified as *P. angustifolia* subsp. *merxmülleri* (Fig. 2). Willis collected this at Echo Flat, Lake Mountain, on 6 February 1943 (MEL 0067844A) (RBG Melbourne 2012) (although Willis (1948) recorded **P. hieracioides* beyond, not at, Lake Mountain in February 1943). *Picris* was not recorded during the Field Naturalists Club of Victoria camp-out at Lake Mountain in January 1948 (Willis 1948) but, after revisiting Lake Mountain the following January,

J. Ros Garnet recorded the conspicuous presence of 'Hawkweed *Picris* (introduced)' (Garnet 1949a) and added **P. hieracioides* to Willis's Lake Mountain species list (Garnet 1949b). Willis later collected specimens on Mounts Selwyn (MEL 0067845A), Tingaringy (MEL 0067846A) and Buffalo (MEL 0067843A) (RBG Melbourne 2012). Willis annotated his 1963 Buffalo collection 'Not uncommon in various parts of Mount Buffalo National Park', while T.B. Muir annotated his 1960 Mount Higginbotham collection (MEL 0067850A) 'An introduced plant' (RBG Melbourne 2012).

In his *Handbook*, Willis (1973) recorded **P. hieracioides* L., Hawkweed *Picris*, as 'frequent throughout alps and subalps of E. highlands, but rare and scattered in W.' and, with its 'more hispid stems and foliage, rather larger heads (to 15 mm. long) and more numerous, very spreading or recurved outer bracts', the variety *squarrosa* found 'on sandy banks of the Murray R. near Mildura' was 'probably indigenous'. Willis annotated his October 1967

collection near Mildura (MEL 0067859A, now identified as *P. squarrosa*) 'Perhaps indigenous' (RBG Melbourne 2012).

Meanwhile, because they were identified as **P. hieracioides*, MEL *Picris* collections were indexed for the Australian National University's Introduced Plants Project (RBG Melbourne 2012).

Australian *Picris* collections continued to be identified as **P. hieracioides* until European taxonomists reinstated old names and established new taxa.

***Picris* revision by Lack and Holzapfel**

At the Botanischer Garten und Botanisches Museum in Berlin in 1979, Dr H. Walter Lack undertook a preliminary investigation of Australian collections of *Picris* and recognised the presence of several new species and the general absence of the one to which they were usually referred, *P. hieracioides* (Lack 1979,



Figure 2. *Picris angustifolia* subsp. *merxmülleri* in Kosciuszko National Park. Photo: Jackie Miles.

1987).⁴ Under Lack's supervision, Sebastian Holzapfel undertook a complete revision of the genus in Australia and increased the number of indigenous species to ten, nine being endemic and one occurring also in New Zealand (Holzapfel & Lack 1993; Holzapfel 1994). This was in time for Jeff Jeanes to include *P. angustifolia* subsp. *angustifolia*, *P. angustifolia* subsp. *merxmulleri*, *P. barbarorum* (possibly extinct) and *P. squarrosa* in the *Flora of Victoria* (Jeanes 1999).

Thus, two centuries after *Picris* was first collected in Australia, Lack and Holzapfel quashed the long-held belief that it was naturalised and confirmed the earlier understanding of Robert Brown, Joseph Hooker and, more tentatively, George Bentham, that *Picris* is indigenous to Australia; but not as *P. hieracioides*.

Summary

The idea of *Picris hieracioides* in Australia began in the mind of the much-travelled collector-taxonomist, Robert Brown. Among Australian collections of *Picris* Brown saw only *P. hieracioides*, which he considered indigenous to Australia as well as Europe.

The idea of *P. hieracioides* as the sole taxonomic identity of *Picris* in Australia was strengthened by Joseph Hooker, another well-travelled collector-taxonomist and authority on Australian plants. But Hooker saw more than its taxonomic identity. In the variable and widely dispersed *P. hieracioides* Hooker saw opportunities for taxonomic power and prestige. Its disjunct distribution demanded explanations that could elevate the status of botany and Hooker above purely descriptive pursuits. And the perpetuation of such broadly circumscribed species in colonial floras would help keep taxonomic power from colonial and continental species-splitters, such as the authors of the Australian species that Hooker synonymised under *P. hieracioides*.

Victoria's government botanist, Ferdinand von Mueller, initially identified collections as Australian species. However, possibly convinced by Hooker's *Picris* decision, Mueller changed from follower of non-Kew *Picris*-splitters to adherent of the Kew *Picris* line and began identifying Australian collections as *P. hieracioides*.

In his *Flora australiensis*, Bentham echoed Hooker. But he tweaked two aspects of *P. hieracioides sensu* Hooker. Aware that *P. hieracioides* was spreading with agriculture, Bentham questioned its absolute indigenous status in Australia; and, from one of the Australian species, he established a variety.

Mueller ignored the variety and, with field observations and access to an increasing number and geographic range of *Picris* collections, he went further than Bentham and declared *P. hieracioides* a naturalised alien.

Picris in Australia was now doomed to alien status. Bentham's *Flora australiensis* and Mueller's Victorian *Key* and Australian *Census* cast long taxonomic shadows. **Picris hieracioides* appeared in floras and species lists across 20th century Australia, with *P. hieracioides* var. *squarrosa* sometimes considered the sole indigenous entity. In the absence of critical taxonomic examination, the idea of **P. hieracioides* as the taxonomic identity of *Picris* across Australia remained unchallenged.

The idea died as it began – in taxonomic minds examining *Picris* collections. Death was by critical revision of *Picris* in Australia. Lack and Holzapfel reinstated old names and established new taxa. At last *Picris* plants could raise their yellow heads in Australia without being identified as naturalised aliens.

Acknowledgements

I acknowledge and thank Pina Milne at the Royal Botanic Gardens Melbourne for providing access to the MELISR collections database. I am indebted to Alison Vaughan for extracting innumerable initial determinations and other original collecting information on MEL collections and Neville Walsh for taxonomic and nomenclatural information. I thank Clare Herscovitch for National Herbarium of New South Wales collection information, Nicholas Hind for clarifying details about Kew collections and Rod Home for access to unpublished Mueller correspondence. I also appreciate Jill Thurlow's clarification of bibliographic puzzles and the perceptive comments of Tom May and two referees.

4. *Picris echioides* was transferred to *Helminthotheca* in 1973.

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Appendix 1. *Picris* collections 'Seen by Bentham' (RBG Melbourne 2012)

MEL number	Collector and number	Collecting date	Current determination	Mueller's determination	State	Locality
0067721A	Preiss 108	8.xii.1839	<i>P. squorraso</i>	[none]	WA	In salo limaso districtus Vasse et Murray
0067856A	Preiss 108	8.xii.1839	<i>P. squarrasa</i>	[nane]	WA	In Nava Hallandia, Swan River
0713173B	Preiss 108	8.xii.1839	<i>P. squorrosa</i>	[none]	WA	
2168760A	s.n.		<i>P. squarrasa</i>	<i>Sanchus</i>		Dan River
0067854A	Mueller s.n.	10.i.1848	<i>P. angustifolia</i> subsp. <i>angustifolia</i>	<i>P. squarroso</i>	SA	Third Creek
0067854B	Mueller s.n.	10.i.1848	<i>P. squarrasa</i>	<i>P. squarrasa</i>	SA	Third Creek
0067759A	Mueller s.n.	15.iv.1848	<i>P. squarrasa</i>	<i>P. ongustifolia</i> var. <i>prolifca</i>	SA	Tanunda
0067801A	Mueller s.n.		<i>P. squarrosa</i>	<i>P. angustifolia</i>	SA	Gambier
0067803A	Mueller s.n.		<i>Picris</i>	<i>P. squorroso</i>		
0067834A	Schulzen s.n.	[c. 1848–53]	<i>Picris</i>	<i>P. angustifolia</i>	SA	near Guichen Bay
0067857A	Moxwell s.n.		<i>P. drummondii</i>	<i>Picris</i>	WA	Oldfield River. Near the inlet.
0067789A	Walls s.n.		<i>P. ongustifolia</i> subsp. <i>caralarum-henricorum</i>	[nane]		
0067822A	Stuart s.n.	xii.1855	<i>P. angustifolia</i> subsp. <i>angustifolia</i>	<i>P. barbararum</i>	Tas.	Sauthpart
0067767A	Dallachys s.n.	[1858]	<i>P. squarrosa</i>	<i>P. angustifolia</i>	Vic.	Murray River
0067835A	Stuart 10		<i>P. ongustifolio</i> subsp. <i>corolorum-henricorum</i>	<i>P. ongustifolia</i>	Qld	Breakfast Creek, near Maretan Bay
0067780A	Whan 11		<i>P. angustifolia</i> subsp. <i>angustifolia</i>	<i>P. angustifolio</i>	Vic.	Bullaraak Farest
0067781A	Whan 27		<i>Picris</i>	<i>P. angustifolia</i>	Vic.	[?Mount] Emu Creek
0067794A	Milligan 231		<i>P. ongustifolia</i> subsp. <i>angustifolia</i>	<i>P. hieracioides</i>	Tas.	Hampshire Hills
0067800A	Beckler s.n.	[1859–60]	<i>P. eichleri</i>	<i>P. hieracioides</i> ar [none]	NSW	Hastings River
0067800B	Beckler s.n.	[1859–60]	<i>P. angustifolia</i> subsp. <i>carolorum-henricorum</i>	<i>P. hieracioides</i> or [none]	NSW	Hastings River
0067724A	Beckler s.n.	[1859–60]	<i>P. angustifolia</i> subsp. <i>carolorum-henricorum</i>	<i>P. hieracioides</i>	NSW	Macleay River
0067787A	Beckler s.n.	[1859–60]	<i>P. angustifolia</i> subsp. <i>caralarum-henricarum</i>	<i>Picris</i>	NSW	Clarence River
0067855A	Beckler s.n.	[1859–60]	<i>P. angustifolio</i> subsp. <i>corolorum-henricorum</i>	[none]	NSW	Clarence River, River Anne
0067787B	Beckler s.n.	[1859–60]	<i>P. angustifolia</i> subsp. <i>carolorum-henricarum</i>	<i>Picris</i>	NSW	McLennans [?Station]
0067785A	Dollachys s.n.	[1860]	<i>P. squorroso</i>	<i>Picris</i>	Vic.	Wimmera [River]
0067786A	Beckler s.n.	[1860–1]	<i>P. squorrasa</i>	[nane]	NSW	Darling River [during the Burke and Wills Expedition]
0067735A	Waterhouse s.n.	[1860–1]	<i>P. angustifolia</i> subsp. <i>ongustifolio</i>	<i>P. hieracioides</i>	SA	Kangaroo Island
0067797A	Oldfield s.n.	[c. 1861]	<i>P. angustifolia</i> subsp. <i>angustifolia</i>	<i>P. hieracioides</i>	WA	Capel River

MEL number	Collector and number	Collecting date	Current determination	Mueller's determination	State	Locality
0067733A	Oldfield s.n.	[c. 1861]	<i>Picris</i>	<i>Picris</i>	WA	Blackwood River
0067737A	Thozet s.n.	[c. 1859–62]	<i>P. ongustifolio</i> subsp. <i>carolorum-henricorum</i>	<i>P. hierocioides</i>	Qld	Keppel Bay
0067772A	Allitt s.n.		<i>P. squorroso</i>	[none]	Vic.	Mouth of Glenelg River
0067730A	Moore 54	ii.1865	<i>P. ongustifolio</i> subsp. <i>carolorum-henricorum</i>	<i>P. hierocioides</i>	NSW	Shoalhaven Gullies
0067739A	Fowcett s.n.		<i>P. ongustifolio</i> subsp. <i>carolorum-henricorum</i>	[none]	NSW	Richmond River
0067790A	?Stuart 86		<i>P. ongustifolio</i> subsp. <i>carolorum-henricorum</i>	<i>Picris</i>	NSW	Brunswick and Tweed Rivers
0067796A	s.n.		<i>P. ongustifolio</i> subsp. <i>carolorum-henricorum</i>	<i>Picris</i>	Qld	Rockhampton
0067751A	s.n.		<i>P. ongustifolio</i> subsp. <i>carolorum-henricorum</i>	[none]		